AMENDMENTS TO THE CLAIMS

1. (currently amended) A method for manufacturing aluminum alloy parts with precipitation hardening comprising :

subjecting at least two elements made from the same alloy or different alloys to heat treatment at a temperature T for at least $2t_1$, wherein t_1 comprises a minimum treatment duration at temperature T leading to a specific melting peak energy defined by Differential Scanning Calorimetry ~~and~~of less than 1 J/g;

friction stir welding said at least two elements, and thereafter;

conducting a solution heat treatment, and

quenching welded parts.

2. (original) A method according to claim 1, wherein the specific melting peak energy is less than 0.5 J/g.

3. (original) A method according to claim 2, wherein the specific melting peak energy is less than 0.1 J/g.

4. (original) A method according to claim 1, wherein the temperature T is less than the alloy burning temperature by not more than 20°C, or if different alloys are used, the lowest burning temperature of these alloys.

5. (original) A method according to claim 1, wherein the burning temperature of the alloy is less than 500°C, and the treatment duration is at least 24 h.

6. (original) A method according to claim 5, wherein the treatment duration is at least 48 h.

7. (original) A method according to claim 1, wherein the heat treatment is done at a homogenization stage before rolling, extrusion, or forging.

8. (original) A method according to claim 1, wherein the heat treatment is reheating between two hot rolling, extrusion, or forging passes.

9. (original) A method according to claim 1, wherein the heat treatment is conducted on a partly finished rolled or forged product before welding.

10. (original) A method according to claim 9, wherein the heat treatment is followed by quenching.

11. A method according to claim 1, wherein at least one of the alloys is a 2024 alloy having a manganese content by weight of less than about 0.3%.

12. (original) A method according to claim 1, wherein at least one alloys comprises a copper-containing alloy of the 7xxx series having a chromium content by weight of less than about 0.15%, and a zirconium content by weight of less than about 0.09%.

13. (original) A method according to claim 12, wherein the copper content is at least about 0.5%.

14. (original) A method according to claim 1, wherein inert gas is flushed over the surface of a welding zone, during welding.

15. (withdrawn) A part comprising at least two elements made from aluminum alloy with precipitation hardening, welded by friction stir welding and treated after welding by solution heat treatment and quenching, wherein the grain size in a welded zone of said part is less than about 200 μm after solution heat treatment and quenching, and wherein at least one of said elements is made from a copper-containing alloy of the 7xxx series with a chromium content of less that 0.15 wt-% and a zirconium content of less than 0.09 wt-%.

16. (withdrawn) An aeronautical construction comprising a part as claimed in claim 15.

17. (withdrawn) A friction stir welded part, wherein in a welded zone thereof, the micrography comprises a fine crystalline structure with a relatively homogenous grain size between 50 and 200 μm.

18. (withdrawn) A friction stir welded part, of claim 17, having an average grain size in said welded zone on the order of 120 μm.

19. (new) A method for manufacturing aluminum alloy parts with precipitation hardening comprising :

subjecting at least two elements made from the same alloy or different alloys to a homogenization heat treatment at a temperature T for at least $2t_1$, wherein t_1 comprises a minimum treatment duration at temperature T leading to a specific melting peak energy defined by Differential Scanning Calorimetry of less than 1 J/g, wherein the temperature T is less than a burning temperature of the alloy, or a lowest burning temperature of the different alloys, by not more than 20°C, thereafter;

friction stir welding said at least two elements,

conducting a solution heat treatment, and

quenching welded parts.